Ensuring affordable, long term, environmentally sound disposal of MSW

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MEMORANDUM

TO: Paula Clark
FROM: Greg Lounder
DATE: September 21, 2006
RE: **BR Commission Follow Up**

Please find enclosed a copy of a memorandum related to PERC environmental performance and other related solid waste policy matters. I raised the memo at the last BR Commission as being of potential informational interest to the group. I understood you were willing to provide the memo to the group for informational purposes.

Feel free to contact me at 800-339-6389 with any questions.

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MEMORANDUM

TO: Charter Municipalities
FROM: Greg Lounder, Municipal Review Committee, Inc.
RE: Environmental Performance of the PERC Facility
DATE: 12 April 2006

A key part of the MRC's mission is to ensure the long-term disposal of solid waste via methods that are environmentally sound. With waste management and environmental issues in the headlines and under discussion at the state agency and legislative levels, it is more important than ever for the Charter Municipalities to understand the superb performance of the PERC facility in achieving this aspect of the MRC's mission.

This memorandum presents and explains key aspects of the PERC facility's record of environmental performance in 2005, including recent test results and general environmental performance. This memorandum also presents PERC's policies toward not accepting construction and demolition (C&D) waste and accepting out-of-state waste.

Stack Test Results

In accordance with its air emissions license from the Maine DEP, every year PERC hires an independent third-party testing firm to test whether the facility complies with the emissions limits and operating conditions that are specified in the license. The tests are meant to ensure that the level of pollutants emitted by the facility are at or below limits set by the Maine DEP to avoid significant impacts on public health and the environment.

Tests are conducted for the following types of pollutants:

Type of pollutant	*Pollutants*
Ozone precursors	Nitrogen oxides (NOx) Carbon monoxide (CO)
Acid gases	Sulfur dioxides (SOx) Hydrogen chloride (HCl)
Particulate matter	Total particulates
Trace metals	Arsenic, beryllium, cadmium, chromium, lead, mercury, nickel
Trace organics	Dioxins and furans
Fugitive emissions	Dust from the ash management system

The most recent tests were conducted in September 2005. To ensure objectivity, the tests are conducted by an independent contractor in accordance with strict protocols and standards, and the conduct of the tests is witnessed by representatives of the Maine DEP.

We have reason to be proud of the results of these tests. As presented in Exhibit A, not only did the PERC facility comply with all of the standards in its air emissions license, but it performed significantly better than the license requirements – and by a wide margin.

Specific results can be summarized as follows:

- Emissions of NOx and CO (the pollutants that contribute to smog), which are controlled through good combustion practices, were well below the allowable limits. NOx emissions were at 82 percent of the allowable limit, and CO emissions were at 45 percent of the allowable limit.
- Emissions of SOx and HCl (pollutants that contribute to acid rain), which are controlled by the facility's dry scrubbers, were well below the allowable limits. SOx emissions were at 32 percent of the allowable limit, and HCl emissions were at only 6.7 percent of the allowable limit.
- Emissions of total particulates were at 39 percent of the allowable limit.
- Emissions of trace metals were very low. No emissions of mercury at all were detected during the stack test. Emissions of lead and cadmium were approximately 100 times lower than the allowable standards.
- Emissions of dioxins and furans were very low. In fact, emissions of dioxins and furans together were approximately 9 times lower than the allowable standards.
- No fugitive emissions were observed from the facility's ash handling system.

General Environmental Performance

The Charter Municipalities should be aware of the following information regarding the performance of the PERC facility in 2005:

- For the four pollutants that are monitored continuously throughout the year (NOx, CO, SOx and opacity), emissions from the PERC facility stayed below permit limits at all times for the entire year. This outstanding record for 2005 represents a significant improvement in performance over the late 1990s and is the culmination of steady improvements in environmental performance since the facility was retrofitted with a new boiler fuel feed system in 2000.
- The PERC facility generated and delivered to the grid 152,766 MWh of electricity in 2005. This represents enough electricity to power more than 15,000 homes. By using solid waste as fuel, the PERC facility avoided the need to combust the equivalent of 1.06 billion cubic feet of natural gas or 12 million gallons of #2 fuel oil in order to generate electricity. In that context, the PERC facility also avoided the emissions of greenhouse gases and other pollutants that are associated with the combustion of fossil fuels to generate electricity.
- The PERC facility accepted and processed over 303,000 tons of solid waste in 2005. Accounting for residuals materials such as ash and front-end process residue, the PERC facility reduced the volume of material going to landfills by 442,000 cubic yards, which is a reduction of approximately 87 percent of the volume that would

have been required for landfill disposal of all solid waste delivered to the PERC facility. Viewed another way, the landfill space saved by PERC is equivalent to a pile of trash 10 feet high over a 30-acre area. Moreover, through efficient management, PERC accepted all of the solid waste that was contracted to be processed and was delivered to the facility without bypassing any loads of processible waste at all to landfills, even during scheduled shutdowns for maintenance.

- The PERC facility recovered 10,208 tons of ferrous material from incoming solid waste in 2005, making it one of the largest recycling facilities in Maine. The ferrous material was transported to a processing facility in southern New England to be processed and marketed as scrap metal.

PERC Policy toward C&D Waste

PERC's policy regarding C&D waste is quite straightforward. PERC does not accept any construction and demolition debris (C&D) waste for combustion in the facility boilers (other than incidental amounts mixed in with deliveries of municipal solid waste). Moreover, PERC does not accept any wood fuel recovered from the processing of C&D waste for combustion in the facility boilers. The PERC facility accepts mainly municipal solid waste, but has the capability to utilize supplementary fuels (e.g., green wood chips or chipped and processed tires) as needed when solid waste in not available in adequate quantities for the facility to operate at full capacity. In past years, PERC had accepted significant quantities of green wood chips, and small quantities of chipped and processed tires, for use as fuel in the winter months, when the quantities of solid waste generated in Maine are at a seasonal low-point. Give a choice of available fuels, it is technically, physically and economically preferable for PERC to accept municipal solid waste rather than any other fuel.

PERC Policy toward Out-of-State Waste

PERC accepts solid waste from out-of-state sources as a supplement at times when Charter Municipalities do not provide enough solid waste for the facility to operate at full capacity. Operating at full capacity maximizes energy production and efficiency and keeps overall operating costs to the lowest level possible. Accepting outside waste when fuel supplies are low allows the facility to perform at its peak both environmentally and economically.

PERC's preferred source of fuel is solid waste from Charter Municipalities, but, in the aggregate, the facility can accept more solid waste than the existing Charter Municipalities are currently supplying. This is especially true in the winter, when waste generation is diminished by reduced economic activity including tourism. To supplement waste from the existing Charter Municipalities, PERC and the MRC have historically worked together under an "open door" policy to attract new Maine communities to deliver waste to the PERC facility and to become Charter Municipalities. Since 1998, 46 municipalities and public entities have become new Charter Municipalities and have joined the MRC. These new Charter Municipalities are now delivering their waste to the PERC facility under contracts that extend through 2018.

When the facility has more capacity than the Charter Municipalities can utilize, PERC brings in additional solid waste as needed from other in-state municipal and commercial sources. Generally, the waste from these sources is brought in under short-term or spot market arrangements in order to reserve capacity in the long-term to meet the solid waste needs associated with growth within the Charter Municipalities. Thus, the facility operates economically and efficiently, while the Charter Municipalities retain the ability to obtain their entitlements of the facility's capacity over time through the contractual right to increase Guaranteed Annual Tonnage or (GAT).

Despite these efforts, there continue to be times when the facility has capacity in addition to what the Charter Municipalities and in-state suppliers are utilizing. At these times, out-of-state waste is brought in to the facility to fill the gap, thereby allowing the facility to perform at its peak both environmentally and economically. Typically, the out-of-state waste is accepted at the facility under short-term contracts, spot market arrangements or interruptible contracts, with a lower priority of service than PERC provides to the Charter Municipalities or to commercial providers of in-state waste. Thus, PERC uses out-of-state waste to enable the facility to operate efficiently and economically, while reserving capacity to serve the seasonal and long-term needs of the Charter Municipalities and other providers of in-state commercial waste.

Please contact Greg Lounder at 800-339-6389 or 942-6389 with any questions.

Exhibit A
Summary Results of Air Emissions Testing at the PERC Facility in 2005
Sources: Final Report, Stack Emissions Compliance Test Program, PERC Facility, 2005; PERC CEM data

Pollutant	*Allowable limit*	*Average of test results*	*Test result value as percent of allowable limit*
Nitrogen oxides (NOx)	230 ppmdv @ 7% O2	188.0 ppmdv @ 7% O2	82%
0Carbon monoxide (CO)	200 ppmdv @ 7% O2	89.5 ppmdv @ 7% O2	45%
Sulfur dioxides (SOx)	29 ppmdv @ 7% O2	9.2 ppmdv @ 7% O2	32%
Hydrogen chloride (HCl)	29 ppm @ 7% O2	1.95 ppm @ 7% O2	6.7%
Total particulates	22.9 mg/dscm @ 7% O2	8.87 mg/dscm @ 7% O2	39%
Trace metals			
• Arsenic	• No limit in permit	• <0.00060 mg/dscm @ 7% O2	
• Beryllium	• No limit in permit	• <0.00004 mg/dscm @ 7% O2	
• Cadmium	• 0.04000 mg/dscm @ 7% O2	• 0.00037 mg/dscm @ 7% O2	0.93%
• Chromium	• No limit in permit	• 0.0130 mg/dscm @ 7% O2	
• Lead	• 0.4400 mg/dscm @ 7% O2	• 0.0049 mg/dscm @ 7% O2	1.1%
• Mercury	• 0.0280 mg/dscm @ 7% O2	• <0.0025 mg/dscm @ 7% O2	< 8.9%
• Nickel	• No established limit	• 0.0047 mg/dscm @ 7% O2	
Dioxins/furans	30 ng/dscm @ 7% O2	3.40 ng/dscm @ 7% O2	11.3%
Fugitive emissions, ash system	< 5% of observation period	0% of observation period	0%

Abbreviations

- ppmdv = parts per million dry volume
- mg/dscm = milligrams per dry standard cubic meter
- ng/dscm = nanograms per dry standard cubic meter

Values with < (a "less than" sign) are the detection limits, which are provided for tests when the identified pollutant was not detected. In such cases, the emission level of such identified pollutant was below the lowest value that could be detected by the test equipment used during the test (the detection limit).
Values are adjusted to 7% oxygen concentration to correct for dilution by excess combustion air.